5340, MSD Perry Township

PROJECT ABSTRACT

The awarding of this grant will allow Perry Township to design a completely new Algebra based curriculum in mathematics classrooms at Southport Middle School, establish a rich partnership with the University of Indianapolis to further our teachers¿ growth in content area knowledge, and integrate 21st century technologies to increase the rigor and relevance of learning in our classrooms. Through this project we will capitalize on our findings from two previous pilot programs and utilize the best practice ideas from both to create solutions for the individual learning challenges we find in our diverse population. It is our belief that by providing our students with reliable online environments and resources, access to a repository of higher level learning activities, and implementing a systemic approach to teaching mathematical concepts will allow us to better access the learning of each and every student, and individualize instruction so that each student shows growth. Our ultimate goal is to expand and enrich the learning environment to help our students master state standards and improve standardized test passing rates.

There are three key components to our proposal:

¿ Perry Township will partner with the University of Indianapolis to blend the understanding and advancement of technology, pedagogy, and content knowledge in our math classrooms. The framework for this will be the TPAK model, currently being utilized by the University of Indianapolis¿ teacher education program. Utilizing professional development monies, our math teachers will become involved in content area knowledge enrichment through Uindy.

¿ The two integration learning specialists will organize with Uindy to create the groundwork of a completely online day to day Algebra based classroom. Students will be asked to math journal, solve complex problems, and submit the majority of work electronically. Instruction will thereby be enriched and personalized to meet complex student needs. These individuals will coordinate efforts between the district, the school, and the university as well as the 6 non-public schools in our township in order to provide professional development on the implementation of the learning model.

¿ Learning environments will be designed and installed in the math classrooms to facilitate the new courses. The new curriculum will be implemented in the classrooms with a team approach ¿ with math teachers and Uindy pre-service teachers working together to ensure fidelity in the execution. The teacher will move to a stronger facilitation role as the leader in the classroom. The integration specialists will oversee this process and will be responsible for sharing the information with teachers around the district so that the pieces that bring the greatest benefit can be adopted into the district¿s curriculum.

We have invited the six non-public schools in our district to join Perry Township in this growth opportunity. Should they decide to participate the integration specialists will be available to assist teachers in those buildings as they grow in implementation of technology in the classroom. Participating schools will also be invited to take part in the workshops and seminars that the University of Indianapolis and Perry Township host to increase content and technology knowledge in the math

classrooms. MSDPT is committed to sustaining and sharing successful instructional practices that bring growth in student achievement.

NEEDS/BASELINE

Southport Middle School¿s eighth grade math scores have been below the state average for the past ten years. Despite our efforts to target deficiencies, we have not been able to reach the state average. Interestingly, two pieces of data give us hope. Over the past three years, (2006-2009) eighth grade math scores have increased by a few percentage points each year. Our 7th grade math scores have been at or slightly above the state average, so the drop is occurring between 7th and 8th grade. Consistent information is found in the IPI standards data, where Southport Middle School¿s scores have fallen to below state averages in all areas. Our greatest needs are in the areas of problem solving and computation, and this was addressed as a specific goal in the school¿s PL221 plan for school improvement. Additionally, our high achieving gifted and talented students plateau in our middle schools. While their scores remain high, we do not see additional growth in achievement.

Currently in SMS math classrooms teachers utilize traditional instructional methods where most information is passed from the instructor to the students. Technology is viewed as an additional piece rather than seamlessly used at the point of instruction. Teachers have grown in their use of technology peripherals; however the power of these tools is not fully achieved to impact learning. A good deal of improvement and change with instructional strategies is needed so that our teaching methods are consistent with students¿ interaction with the world and what will be expected of them in the future. It is critical that we expose our students to higher level math courses at the middle school level. To do this, our teachers are going to need personal growth in this content area. Professional growth experiences will enhance educators¿ knowledge within and across subject areas and their ability to foster and assess students¿ problem solving and critical thinking skills.

These same trends and instructional practices were occurring in our English/Language Arts classrooms until 2008-2009 school year. At that time we implemented a prescriptive process learning model where the students were assessed on content standards and assigned to appropriate levels of instruction. Professional development was provided to the teachers so that this new process model of learning could be implemented with fidelity. We have seen marked success in our English/Language Arts achievement over the past year.

With the awarding of the Indiana Access Grant last year, Perry Meridian High School, was able to begin the exploration of the impact of 1:1 computing in Perry Township classrooms. This grant enabled us to provide vital professional development to help our teachers learn strategies to include collaboration in the learning process. Our early data is reveling success toward our specific targets of increasing student

achievement (higher scores on common assessments), Individualized, student-centered work environments (online learning modules), and the ability of our students to communicate knowledge using a variety of models. These goals are targeted in the district¿s strategic plan with was approved in 2009. It is because of this success with both the 1:1 classroom and the process learning model that we feel taking by taking the best from both we can create a learning environment at Southport Middle that will address the diverse needs of our learner in the mathematics classrooms.

GOALS/OBJECTIVES

Our district¿s three year technology plan outlines our vision for supporting learning through the effective use of all resources to develop self-directed learners. Our goals include expanding the environment in which our students learn to include local and global information and connections. Collaboration is key to helping our students develop critical thinking and problem solving skills; however without application and synthesis, the value of the learning tools is lost in the classroom. Our students need individualized instructional models in their math classrooms with teachers who are versed at using a variety of engaging tools explore algebraic concepts. In order to implement a model such as this in our math classrooms, it is necessary to address the accessibility of technology at the point of instruction. Currently teachers and students have access to 3 wired computer labs and 2 sets of mobile carts that are available for use. In a school with a population of 1100 students, the opportunity for daily integration of technology is limited. The use of these tools to engage students and provide effective instructional opportunities can be overwhelming for teachers. Our teachers need support and guidance as they grow in their knowledge how to teach higher level mathematical concepts to middle school students, and the ways technology can be integrated to support critical thinking skills. This will allow out teachers to differentiate their instruction to meet multiple learning needs, target the specific problem areas (problem solving, and computation) and help raise the achievement of students at all levels of learning, low, middle, and high.

We will know we are making progress towards these targets when we reach the following goals:

1. Increase classroom engagement and motivation

o More assignments will be turned in

o Teachers will observe more time on task in the classroom

o The learning environment will be individualized, hands-on, and familiar as student used tools and resources

outside of the four walls of the classroom

2. Increase student achievement at all levels

o Teachers will observe more depth in the student learning reflected on the assignments.

o Students in these classrooms will score higher than their counterparts on department required common

assessments.

o More students will enroll in higher level math courses

o High achieving students will show growth on assessments

3. Increase daily classroom attendance ¿ Decrease student behavior referrals

o Classroom learning will also take place outside of regular class time through online learning resources

o Address individual learning needs

METHODS/ACTIVITIES

1. Establish partnership with the University of Indianapolis (outlined below)

2. Employee two technology integration specialist to develop a rigorous curriculum and effective instructional strategies

To support his endeavor, we would like to hire two full time technology integration specialists dedicated to support a change in mathematical instruction. In order to address individual learning needs we will use an online learning environment. These educators will be committed leading the initiative to create an individualized algebra based mathematics curriculum at Southport Middle School. They will collaborate with our math teachers, high school department chairs, and Uindy math education professors to build a repository of online resources and use this information to create the new standardized curriculum in Moodle. We see this content as essential to preparing our students for the rigors of the complex, challenging, and rapidly changing world of their future. The students at Southport Middle School need to be exposed to more rigorous math concepts. Part of our challenge is that many of our teachers at this school have elementary teaching licenses and lack the expertise that is necessary to teach Algebra and Geometry. Ongoing coaching opportunities in the classroom will be provided by these specialists as specific needs and challenges are presented.

3. Implement a student centered algebra based math curriculum in all math classrooms

4. Connect math learning to science concepts

Because math and science have many integrated concepts, we believe purposefully establishing connections in the process learning for both subject areas will lead to increased achievement in both subjects. In order to take problem solving to a higher level, we will develop a middle school robotics program. In line with the STEM education coalition¿s work, we believe the robotics program offers students an opportunity to explore skills and knowledge in the science field, and the flexibility of assessing this learning though presentations and project portfolios. The integration specialists will work closely with the high school robotics sponsors and teams to bridge the successful business partnerships and learning models down to the middle school classrooms.

5. Build productive partnerships between community, school, and home

The University Of Indianapolis School Of Education had adopted the TPCK model for their coursework in preparing teachers for careers in education. This model purposefully addresses the needs of learners in three areas: technology knowledge, pedagogy knowledge, and content knowledge. This model could also serve as a basis for our teachers as they grow and learn new ways of meeting the needs of the many different learning styles in our classrooms today. The University of Indianapolis is in the Perry Township community. By partnering with them we can reap the benefits of the research they have done thus far, collaborate with their professionals to find ways to increase the content knowledge of our teachers, and provide a platform for nurturing and learning for their students that will be mutually beneficial to our seasoned veterans. Additionally, it is our hope that this partnership leads to opportunities for our students to be exposed to post secondary learning options by providing positive role models and encouraging our middle school students to strive for learning beyond high school. As outlined in the STEM objectives for learning, we believe that excellence in these content areas, as well as encouraging students to pursue careers in Science, Technology, Engineering, and Mathematics, is vital to our nation¿s economic prosperity and global competitiveness. Along with the university, we want to establish strong connections between the home and school. This will be started by hosting math nights at Southport Middle School where families can have learning experiences together. Moodle will also be utilized for collaboration.

PROFESSIONAL DEVELOPMENT

Professional development will be offered in a variety of ways including face-to-face workshops, an online collaborative community of learners, and online "webinar" learning. Some of our professional development will be in partner with the University of Indianapolis.

Phase 1

¿ Awareness session for participating teachers, administrators, project leaders

--introduction to process learning ideas

--teaching and learning in a segmented learning environment

--online resources

--online assessment pieces

--problem/project based learning

¿ Hardware training for teachers in each school

¿ Beginning needs assessment with knowledge in the content area

¿ Collaboration activities with Southport Middle School teachers and the University of Indianapolis students

via video conferencing or real time meetings

Phase 2

¿ Workshops and seminars based on content area instruction

¿ Workshops and seminars on pedagogical concepts and the application of technology, pedagogy, and content

knowledge in the classroom.

¿ Establish an online learning community with participating teachers and project leaders.

¿ Professional development activities will be designed around "Project Based Learning" using technology as a

tool. There will be four essential concepts of the model:

o Student-driven learning - responsibility for their own learning

o Authentic project-based learning - engaging students in solving problems in their community

o Technology as a tool - access to relevant technologies that enhance learning

o Collaboration - SMS / Uindy teacher teaming for effective implementation

Phase 3

¿ Classroom visits with University of Indianapolis students begin

¿ Implementation of the process learning model

¿ Send participating teachers to relevant conferences on project based learning with secondary students.

¿ Develop data workshop to identify points of information collection and it¿s use in the process of differentiating instruction

¿ Continue collaborative workshop between Uindy and SMS teachers to continue building project based learning models, best practices, successes, pitfalls.

Phase 4

¿ Identify issues and redirect teachers to coach and mentor each other through classroom visits during the school day with substitute teachers.

¿ Workshops and seminars will be held to coach the teams of teachers and Uindy students on how to work with the data from their classrooms

Phase 5

¿ Finalize and implement evaluation tools.

¿ Extend knowledge to other teachers by sharing findings and offering workshops for the university and district

FORMATIVE/SUMMATIVE EVALUATION

Student attendance and behavior referreal data will be analyzed and compared with previous school years to monitor progress toward attendance and behavior goals. Enrollment data will also be analyzed to check for trends in higher level math courses.

An electronic student engagement survey will be distributed at the prior to the implementation and after 6 months to ask students about engagement, math applications at home and school, and work and study habits. A teacher survey will be also be distributed at the same times to gather data on

instructional practices to all teachers in the buildings. These surveys will gather information about student attendance, number of assignments turned in,student time on task, and amount and level of content presented to the class and will compare the students and teachers in this project with those in other math classrooms. A follow-up survey will be after one year to participating teachers analyzing changes to instructional practice and perceptions on student impact. Formally, each month the students are given benchmark assessments to gauge learning toward year end goals. The percentage of growth of these students during the school year will be compared with their percentage of growth over past years. Additionally, a standards based common assessment is given to all students at the end of the course. These scores will be used to assess growth related specifically to problem solving and computation, two of our target areas, as well as the content as a whole. Teacher participants and pre-service teachers will meet as a team to analyze the student achievement data, and their personal growth as a team with content knowledge, and will work to identify impact on student learning based on the instructional practices of this grant. The project director will analyze and compare data from pre and post survey, as well as attendance enrollment data. The final pieces of data to be considered will be the students¿ scores on standardized tests as compared to their counterparts in traditional classrooms, and the enrollment (and success) of more students in higher level math courses. A final report will be written based on findings and distributed to all key administrators. The technology director will replicate the project utilizing capital projects funds if the project goals are met and the inclusion of these instructional practices and technology successfully increases achievement in the math classrooms.

LOCAL MATCH

$50,000

The Metropolitan School District of Perry Township is committed to finding new ways to increase student achievement by providing tangible resources that help our teachers to incorporate research based best practice strategies to meet the needs of our diverse learning community. In these 1:1 classrooms where each student will have a mini notebook computer to access resources, the district will ensure the existing infrastructure can support the addition of this equipment by providing 5 wireless access points to increase the bandwidth near the mathematics classrooms. Additionally, the district will provide additional storage space on the Moodle server to supply ample room for the new curriculum content and student files, and a video server to support rich multimedia content delivery. Finally, the current district initiative of installing 21st Century Classrooms, including an interactive white board, document camera, projector, and sound system will be extended to these math classrooms to strengthen the engagement of students in their learning.

Access Points: $2500.00

Additional storage space on Moodle server: $1000.00

Video server: $5000.00

21st Century Classroom equipment and installation (6 classrooms):

PARTNERSHIPS

An educational partnership has been formed between Metropolitan School District of Perry Township and the University of Indianapolis. Over the past year Perry Township personnel; Dr. Frank Giles, Director of Technology, Research, and Communication, Jane Pollard, Technology Staff Developer, and Ann Sheehan, Intervention Coordinator, have participated on a University of Indianapolis School of Education committee charged with identifying technology integration practices as they relate to content and pedagogy knowledge in pre-service teachers. The continuation of this partnership will provide instructional technology collaborations and discussion regarding the educational impact of this project. Both partners will initially share technical and instructional knowledge that will ensure a smooth transition of process learning into the classrooms. The creation of teams of current teachers with the Uindy pre-service teachers will provide additional adult support in each classroom as the new instructional strategies are being learning. Having the Uindy students work directly in the classrooms will provide a unique field experience as they observe the successes and challenges of the changing educational needs of our students. The Perry Township administrators, Southport Middle School administrators will collaborate with the leader of the teacher education program at Uindy to explore effective process learning environments, and the hardware and software resources necessary for implementation.